

REMARKS

Claims 1, 3-6, and 8-11 remain pending in this application with claims 1 and 6 being amended and claims 2 and 7 being cancelled by this response. Support for the amendments can be found throughout the specification and specifically on page 6, lines 20-36, page 7, lines 1-11 and 21-27, and page 8, lines 1-2. No new matter has been added by these amendments. Claims 2 and 7 have been cancelled.

Rejection of claims 1, 2, 6, 7, and 11 under 35 U.S.C. 102(b)

Claims 1, 2, 6, 7, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by (E.D. Scheirer: "The MPEG-4 Structured Audio Standard" ACOUSTICS, SPEECH AND SIGNAL PROCESSING, 1998. PROCEEDINGS OF THE 1998 IEEE INTERNATIONAL CONFERENCE ON SEATTLE, WA. USA, 12-15 May 1998, vol. 6, pages 3801-3804, hereinafter known as "IEEE").

The present claimed arrangement provides a method for coding impulse responses of audio signals. The impulse responses allow the reproduction of sound signals corresponding to a certain room characteristic. Parameters representing an impulse response of a room for a sound source are generated. The parameters are inserted into multiple successive MPEG-4 PROTO-params fields. A first params field contains information about the number and content of the following params fields.

IEEE describes that the MPEG-4 standard defines numerous tools that represent the state-of-the-art in representation, transmission, and decoding of multimedia data. Among these is a new type of audio standard termed "Structured Audio." The MPEG-4 standard for structured audio allows for the efficient flexible description of synthetic music and sound effects, and the use of synthetic sound in synchronization with natural sound in interactive multimedia scenes. A discussion of the capabilities, technological underpinnings, and application of MPEG-4 Structured Audio is presented. (See Abstract)

IEEE neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” as recited in amended claim 1 of the present arrangement. The subject matter of IEEE is based upon the Structured Audio standard specified in ISO/IEC 14496-3 subpart 5 (IEEE page 3801, col.1, paragraph [0002]). This standard describes the transmission of room impulse responses which make use of the Structured Audio Sample Bank Format (SASBF) in wavetables. Usage of the SASBF requires a structured audio implementation or “structured coding schemes” (IEEE page 3801, col. 1, paragraph [0002]). However, in the present claimed arrangement, it is possible to completely circumvent the transmission of impulse responses via SASBF by “generating parameters representing an impulse response.” While IEEE describes “a block of sample data” that “might contain an impulse response” (IEEE page 3803, col. 1, paragraph [0002]), IEEE does not disclose or suggest actively “generating parameters representing an impulse response.” Thus, IEEE neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” as recited in amended claim 1 of the present arrangement.

In addition, IEEE also neither discloses nor suggests “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement. IEEE transmits impulse responses in a frame-like basis by using “blocks of sample data” which are received by a synthesis engine (IEEE page 3803, col. 1, paragraphs [0002] and [0003]). The synthesis engine then acts “roughly like a set of fixed synthesizers” by “receiving commands” and turning them into sound. Contrary to this, the present claimed arrangement uses the params array in order to transmit room impulse responses. IEEE does not contemplate the use of a params array to transmit room impulse responses, while in the present arrangement, parameters are inserted “into multiple successive MPEG-4 PROTO-params fields” in order to transmit coefficients of a room impulse response in advance of effect rendering or synthesizing. This use of the params array is opposite to the originally intended manner, which is to transmit parameters for a real time control of effects on a frame-like basis. Since the “first params field contains information about the number and content of the following params fields” in a “multiple successive MPEG-4 PROTO-params field,” it is furthermore not necessary to implement the

Structured Audio format of IEEE. Using only one params field allows for the “transmission of data of any length” and allows for the data to be “stored in an additional memory” to be “used during calculation of the effect” (page 7, lines 4-8). As a result, effects can be used on a proprietary basis, and can also be constructed to be backwards compatible to MPEG-4 players which use the Structured Audio format. Thus, IEEE neither discloses nor suggests “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement. Therefore, it is respectfully requested that the rejection of claim 1 is satisfied and should be withdrawn.

Claim 2 is dependent on claim 1 and is considered patentable for the reasons set forth above regarding claim 1. Therefore, it is respectfully requested that the rejection to claim 2 is satisfied and should be withdrawn.

Independent claim 6 contains features similar to those of claim 1 and is considered patentable for the reasons set forth above regarding claim 1. In addition, claim 6 is considered patentable because IEEE neither discloses nor suggests “separating said parameters from multiple successive MPEG-4 PROTO params fields” as recited in amended claim 6 of the present arrangement. Since IEEE fails to disclose or suggest “inserting said parameters into multiple successive MPEG-4 PROTO-params fields,” as recited in claim 1, it so follows that IEEE cannot disclose or suggest “separating said parameters from multiple successive MPEG-4 PROTO params fields.” Thus, IEEE neither discloses nor suggests “separating said parameters from multiple successive MPEG-4 PROTO params fields” as recited in amended claim 6 of the present arrangement. Therefore, it is respectfully requested that the rejection to claim 6 is satisfied and should be withdrawn.

Claim 7 is dependent on claim 6 and is considered patentable for the reasons set forth above regarding claim 6. Therefore, it is respectfully requested that the rejection to claim 7 is satisfied and should be withdrawn.

Independent claim 11 provides the apparatus for the method of claim 1 and is considered patentable for the reasons set forth above regarding claim 1. Therefore, it is respectfully requested that the rejection to claim 11 is satisfied and should be withdrawn.

In view of the above remarks and amendments to the claims, it is respectfully submitted that the present invention is patentable under 35 U.S.C. 102(b) and that this rejection is satisfied and should be withdrawn.

Rejection of claims 3 and 8 under 35 U.S.C. 103(a)

Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE in view of (Koenen, Rob. Coding of Moving Pictures and Audio: MPEG-4 Overview (V.21 – Jeju Version), Rep. No. ISO/IEC JTC1/SC29/WG11 N4668., International Organization for Standardization. 2002. 1-79, hereinafter referred to as “Koenen”).

IEEE neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” as recited in amended claim 1 of the present arrangement. The subject matter of IEEE is based upon the Structured Audio standard specified in ISO/IEC 14496-3 subpart 5 (IEEE page 3801, col.1, paragraph [0002]). This standard describes the transmission of room impulse responses which make use of the Structured Audio Sample Bank Format (SASBF) in wavetables. Usage of the SASBF requires a structured audio implementation or “structured coding schemes” (IEEE page 3801, col. 1, paragraph [0002]). However, in the present claimed arrangement, it is possible to completely circumvent the transmission of impulse responses via SASBF by “generating parameters representing an impulse response.” While IEEE describes “a block of sample data” that “might contain an impulse response” (IEEE page 3803, col. 1, paragraph [0002]), IEEE does not disclose or suggest actively “generating parameters representing an impulse response.” Thus, IEEE neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” as recited in amended claim 1 of the present arrangement.

In addition, IEEE also neither discloses nor suggests “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains

information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement. IEEE transmits impulse responses in a frame-like basis by using “blocks of sample data” which are received by a synthesis engine (IEEE page 3803, col. 1, paragraphs [0002] and [0003]). The synthesis engine then acts “roughly like a set of fixed synthesizers” by “receiving commands” and turning them into sound. Contrary to this, the present claimed arrangement uses the params array in order to transmit room impulse responses. IEEE does not contemplate the use of a params array to transmit room impulse responses, while in the present arrangement, parameters are inserted “into multiple successive MPEG-4 PROTO-params fields” in order to transmit coefficients of a room impulse response in advance of effect rendering or synthesizing. This use of the params array is opposite to the originally intended manner, which is to transmit parameters for a real time control of effects on a frame-like basis. Since the “first params field contains information about the number and content of the following params fields” in a “multiple successive MPEG-4 PROTO-params field,” it is furthermore not necessary to implement the Structured Audio format of IEEE. Using only one params field allows for the “transmission of data of any length” and allows for the data to be “stored in an additional memory” to be “used during calculation of the effect” (page 7, lines 4-8). As a result, effects can be used on a proprietary basis, and can also be constructed to be backwards compatible to MPEG-4 players which use the Structured Audio format. Thus, IEEE neither discloses nor suggests “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement.

Koenen describes an overview of the MPEG-4 standard, explaining which pieces of technology it includes and what sort of applications are supported by it. (See Page 2)

Koenen, like IEEE, also neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement. Although Koenen describes the scope and certain features of MPEG-4, it does not contemplate the use of “MPEG-4 PROTO” or

“generating parameters representing an impulse response of a room for a sound source” as in the present claimed arrangement. Therefore, Koenen neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement.

The combination of IEEE and Koenen, similar to the individual systems, also neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement. The combination of IEEE and Koenen merely describes the use of a Structured Audio format and other possible uses of MPEG-4 technology, but does not contemplate the direct use of the “params field” to transmit impulse responses. The present claimed arrangement, in contrast provides for “inserting said parameters into multiple successive MPEG-4 PROTO-params fields” which allows for the transmission of impulse responses without the use of SASBF. Therefore, the combination of IEEE and Koenen, similar to the individual systems, neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement.

As IEEE, taken alone or in combination with Koenen do not disclose or suggest all of the features of amended claim 1, it follows that since claim 3 is dependent on claim 1, claim 3 is considered patentable for the reasons presented above regarding claim 1. Therefore, it is respectfully requested that the rejection to claim 3 is satisfied and should be withdrawn.

IEEE, taken alone or in combination with Koenen, also does not disclose or suggest all of the features of amended claim 6. As amended claim 6 contains features similar to those found in claim 1, claim 6 is considered patentable for the reasons set forth above regarding claim 1. Claim 6 is also considered patentable because IEEE, taken alone or in combination

with Koenen, neither discloses nor suggests “separating said parameters from multiple successive MPEG-4 PROTO params fields” as recited in amended claim 6. Since claim 8 is dependent on claim 6, claim 8 is considered patentable for the reasons set forth above regarding claim 6. Therefore, it is respectfully requested that the rejection to claim 8 is satisfied and should be withdrawn.

In view of the above remarks and amendments to the claims, it is respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of claims 4, 5, 9, and 10 under 35 U.S.C. 103(a)

Claims 4, 5, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE in view of Koenen in further view of (Scheirer, Eric D. “Structured audio and effects processing in the MPEG-4 multimedia standard.” MULTIMEDIA SYSTEMS 7 (1999): 11-22, hereinafter referred to as “Multimedia Systems”).

Multimedia Systems describes an overview of the “Structured Audio” and “AudioBIFS” components of MPEG-4, which enable the description of synthetic soundtracks, musical scores, and effects algorithms and the compositing, manipulation, and synchronization of real and synthetic audio sources. A discussion of the separation of functionality between the systems layer and the audio toolset of MPEG-4 is presented, and prospects for efficient DSP-based implementations are discussed. (See Abstract)

Multimedia Systems, like the individual systems of IEEE and Koenen, neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement. Multimedia Systems merely provides a description of the Structured Audio components of MPEG-4. However, as stated above in the arguments regarding IEEE and Koenen, the present claimed arrangement provides a method that allows for the circumvention of transmission of impulse responses using Structured Audio. Thus, Multimedia Systems, like the individual systems of IEEE and Koenen, neither discloses nor suggests “generating

parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement.

In addition, the combination of IEEE, Koenen, and Multimedia Systems, similar to the individual systems, neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement. The combination of IEEE, Koenen, and Multimedia Systems, merely describes the use of a Structured Audio format and other possible uses of MPEG-4 technology, but does not contemplate the direct use of the “params field” to transmit impulse responses. The present claimed arrangement, in contrast, provides for “inserting said parameters into multiple successive MPEG-4 PROTO-params fields” which allows for the transmission of impulse responses without the use of SASBF. Therefore, the combination of IEEE, Koenen, and Multimedia Systems, similar to the individual systems, neither discloses nor suggests “generating parameters representing an impulse response of a room for a sound source” and “inserting said parameters into multiple successive MPEG-4 PROTO-params fields, wherein a first params field contains information about the number and content of the following params fields” as recited in amended claim 1 of the present arrangement.

As IEEE, taken alone or in combination with Koenen and Multimedia Systems do not disclose or suggest all of the features of amended claim 1, it follows that since claims 4 and 5 are dependent on claim 1, claims 4 and 5 are considered patentable for the reasons presented above regarding claim 1. Therefore, it is respectfully requested that the rejection to claims 4 and 5 is satisfied and should be withdrawn.

IEEE, taken alone or in combination with Koenen, also does not disclose or suggest all of the features of amended claim 6. As amended claim 6 contains features similar to those found in claim 1, claim 6 is considered patentable for the reasons set forth above regarding claim 1. Claim 6 is also considered patentable because IEEE, taken alone or in combination

with Koenen, neither discloses nor suggests "separating said parameters from multiple successive MPEG-4 PROTO params fields" as recited in amended claim 6. Since claims 9 and 10 are dependent on claim 6, claims 9 and 10 are considered patentable for the reasons set forth above regarding claim 6. Therefore, it is respectfully requested that the rejection to claims 9 and 10 is satisfied and should be withdrawn.

Having fully addressed the Examiner's rejections, it is believed that, in view of the amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at the phone number below, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No additional fee is believed due. However, if an additional fee is due, please charge the fee to Deposit Account 07-0832.

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